

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

REC'D 26 OCT 2004

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Applicant's or agent's file reference PL149PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/FI 03/00546	International filing date (day/month/year) 04.07.2003	Priority date (day/month/year) 12.07.2002
International Patent Classification (IPC) or both national classification and IPC H04L12/14		
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- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 12.02.2004	Date of completion of this report 25.10.2004
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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/FI 03/00546**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-15 as published

Claims, Numbers

1-23 received on 14.02.2004 with letter of 12.02.2004

Drawings, Sheets

1/4-4/4 as published

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-23
	No: Claims	
Inventive step (IS)	Yes: Claims	1-23
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-23
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/FI 03/00546

to section V.

1. The present invention relates to a method for limiting and/or monitoring the use of a data communications connection subject to payment in a packet-switched connection network, to means and to a computer software product therefore, according to the features of the amended independent claims 1, 12 and 23 respectively.
2. The closest prior art document is WO-A1-02 37759 (first document cited in the international search report).
3. According to the features of the independent claims the inventive step consists in that a message is received from the signalling connection concerning the interruption or termination of the session transmitted over the mutual data communications connection, and/or state data is received from the billing system, over the message connection concerning an absence in the billing system of the payment required for providing the session being transmitted over the mutual data communications connection in response to the message concerning the interruption or termination of the session, and/or to the state data received from the billing system, at least one traffic limiter is instructed to break, interrupt, or close the session over the mutual data communication, and a two-way signalling link is set between the connection-formation system and the billing system, through the mediator.

The underlying concept is not disclosed in or rendered obvious by the cited prior art documents. The subject-matter of the independent claims thus fulfils the requirements of Article 33 PCT.

4. The dependent claims contain further details on the subject-matter of the respective independent claims. These dependent claims merely limit the scope of protection sought by the independent claims and are therefore also considered to fulfil the requirements of Article 33 PCT.

Remarks concerning clarity and formal deficiencies

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/FI 03/00546

1. The description has not been modified to bring it into agreement with the numbering of the amended independent claims, Rule 5.1(a)(iii) PCT - cf. on page 1, lines 8 and 13 and on page 3, lines 12 and 13.
2. The closest prior art document WO-A1-02 37759 should have been acknowledged in the opening part of the description, Rule 5.1(a)(ii) PCT.
3. In claim 23 the wording should have been changed to '... in that it includes all the means according ...' to increase the clarity of this claim, Article 6 PCT.

Claims:

1. A method for limiting and/or monitoring the use of a data communications connection subject to payment, between IP clients in a packet-switched connection network (15), in
5 which

-a mutual data communications connection is set (105 - 106) between at least two clients (11 - 12), through a connection network (15),

10 -a signalling connection, routed differently (13) from the mutual data communications connection is set (101 - 102) at least to the client to be billed,

-a traffic limiter (16), based on at least one of the header-field properties, such as the network addresses and/or the port addresses, of the packets being transmitted,
15 is set (103) for the mutual data communications connection,

-the data communications connection are monitored (104) and billed for (108),

-at least one session is transmitted (109) over the mutual data communications connection, and is individuated, and
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-the monitored billing to be charged session-specifically for the data communications connection is controlled (110) and/or the monitored billing is defined session-specifically in the billing system (14),
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characterized in that

-a message is received (107) from the signalling connection concerning the interruption or termination of the session transmitted over the mutual data
30 communications connection, and/or state data (304) is received from the billing system, over the message connection, concerning an absence in the billing system or a deficiency in the billing system of the payment required for providing the session being transmitted over the mutual data communications

connection,

-in response to the message concerning the interruption or termination (107) of the session, and/or to the state data (304) received from the billing system, at least one traffic limiter is instructed (212, 305) to break, interrupt, or close the session over the mutual data communications connection, and

- a two-way signalling link is set (302) between the connection-formation system (13) and the billing system, through the mediator (14).

2. A method according to Claim 1, characterized in that

- sessions are monitored and billed for using the connection-formation system (13) by - either receiving a message from the client (11) concerning the termination or interruption of a mutual session or other data communications connection, - or else in response to a message sent from the billing system (14) concerning the lack or deficiency of a payment allocated to the session,

- in response to the message, the connection-formation system (13) is used to direct a message to the billing system (14) to limit the session-specific billing, and

- further in response to the message, the connection-formation system (13) is used to instruct at least one traffic limiter to close or interrupt at least one session or other mutual data communication connection through the connection network between at least one first client (11) and at least one second client (12).

3. A method according to either Claim 1 or 2, characterized in that the connection-formation system (13) is used to receive an initiation message for a data-communications-based service involving at least one first client (11) and at least one second client (12) and to forward it to the billing system (14).

4. A method according to any of Claims 1 - 3, characterized in that.

- a message confirming the payment required for the use of a data-communications-based service is received from the direction of the billing system (14), and

- in response to the message confirming the payment, the operator's traffic-relaying system (15) is instructed to

- command the formation of a mutual data communications connection between at least one first (11) and one second client (12), and/or

- command the properties of the mutual data communications connect to be those required by a data-communications-based service, or to be advantageous in terms of the data-communications service.

5. A method according to any of Claims 1 - 4, characterized in that the connection-formation system (13) is set to open and/or close data communications connections and/or sessions between the clients (11 and 12), using operations according to the MIDCOM protocol.

6. A method according to any of Claims 1 - 5, characterized in that the interface of the connection-formation system (13) is set for a SIP server in the direction of the traffic control system (15).

7. A method according to any of Claims 1 - 6, characterized in that at least one client, which is addressed to the address-search system being used, is set for the data communications connection.

8. A method according to any of Claims 1 - 7, characterized in that a SIP system (13) is used as the address-search system.

9. A method according to any of Claims 1 - 8, characterized in that the connection-formation system (13) is set to form data communications connections to the clients, using the address-search system.

10. A method according to any of Claims 1 - 9, characterized in that the billing system (14) is set to provide initiations to instruct the traffic-relaying system (15) to interrupt or terminate a session between the clients (11 - 12).

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11. A method according to any of Claims 1 - 10, characterized in that the traffic-relaying system (15) is instructed to interrupt or terminate at least one session or data communications connection between the clients (11 - 12), in response to the state of the billing system (14) directed to the session or data communications connection, which indicates an insufficient payment in the billing system (14) for continuing the session or data communications connection.

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12. Means for limiting the use of a data communications connection subject to payment between IP clients in a packet-switched connection network, which means include

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- means for setting a mutual data communications connection between at least two clients, through the connection network,

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- means for setting a mutual signalling connection, routed differently to the mutual data communications connection,

- means for monitoring and billing for data communications connections,

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- means for setting a traffic limiter based on the properties, such as the network addresses, of the header fields of the packets being transmitted and/or possibly also on the ports of the traffic limiter, for the mutual data communications connection,

- means for transmitting at least one session over the mutual data communications connection, means for individuating a session, and

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- means for controlling the monitored billing to be charged session-specifically for a data communications connection, and/or means for defining the session specifically monitored billing in the billing system,

characterized in that the means include

- 5 - means for receiving a message over the mutual data communications connection from the mutual signalling connection concerning the interruption or termination of a transmitted session, and/or for receiving state data over the mutual data communications connection from the message connection of the billing system, concerning the lack or deficiency in the billing system of the payment required for the provision of the session being transmitted over the mutual data communications
10 connection,
- 15 - means for instructing at least one traffic limiter to break or interrupt a session over the mutual data communications connection, in response to a message concerning the interruption or termination of the session, or to state data received from the billing system, and
- 20 - means for setting a two-way signalling link between the connection-formation system (13) and the billing system, through the mediator (14).
- 20 13. A method according to Claim 12, characterized in that the connection-formation system (13) includes means
 - 25 -for receiving a message from a client (11) terminating or interrupting a mutual session or other data communications connection, and/or
 - 25 -for receiving a message sent from the billing system (14) in response to the insufficiency or smallness of a payment directed to the session,
 - 30 - means for directing a message, for limiting session-specific billing, to the billing system (14) over the connection-formation system (13) to the billing system (14), in response to a received message, and
 - 30 - means for instructing at least one traffic limiter to close or interrupt at least one session

or other mutual data communications connection through the connection network between at least one first client (11) and at least one second client (12), using the connection-formation system (13), also in response to a received message.

5 14. Means according to either Claim 12 or 13, characterized in that they include means for receiving, over the connection-formation system (13), an initiation message for a data-communications-based service concerning at least one first client (11) and one second client (12), and for forwarding it to the billing system (14).

10 15. Means according to any of Claims 12 - 14, characterized in that they include:

- means for receiving, from the direction of the billing system (14), a message confirming the payment required for the use of the data-communications-based service, and

15 - means for instructing the traffic-relaying system (15), in response to the message confirming the payment

- to command the formation of a mutual data communications connection of at least one first (11) and one second client (12), and/or

20 - to command the properties of the mutual data communications connection to be those required by the data-communications-based service, or to be advantageous in terms of the data-communications-based service.

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16. Means according to any of Claims 12 - 15, characterized in that they include means for opening and/or closing data-communications connections and/or sessions between the clients (11 and 12), by means of operations according to the MIDCOM protocol.

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17. Means according to any of Claims 12 - 16, characterized in that they include means for setting the interface of the connection-formation system (13), in the direction of the traffic-control system (15), for a SIP server.

18. Means according to any of Claims 12 - 17, characterized in that they include means for setting a client, addressed to an address-search system used by at least one client, to the data communications connection.

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19. Means according to any of Claims 12 - 18, characterized in that the address-search system being used is a SIP system (13).

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20. Means according to any of Claims 12 - 19, characterized in that they include means, using the address-search system, for setting the connection-formation system to form data communications connections to the clients.

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21. Means according to any of Claims 12 - 20, characterized in that they include means for setting the billing system (14) to provide stimuli to instruct the traffic-relaying system (15) to interrupt or terminate a session between the clients (11 - 12).

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22. Means according to any of Claims 12 - 21, characterized in that they include means for instructing the traffic-relaying system (15) to interrupt or terminate at least one session or data communication connection between the clients (11 - 12), in response to a state of the billing system (14) directed to the session or data communications connection, which indicates an insufficient payment in the billing system (14) for continuing the session or data communications connection.

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23. A computer software product for limiting the use of a data communications connection subject to payment between IP clients in a packet-switch connection network, characterized in that it includes ^{all the} means according to any of Claims 12 - 22, which are computer-readable software means.